In the Drawings

Corrected copies of Figures 2 and 3 have been provided having the boring tool shown in phantom at positions B and C, respectfully. Replacement formal drawings will be provided upon approval of the corrections by the Examiner and upon allowance of the subject application.

In the Specification

Please replace paragraph number 65 with the following:

¶65   Continuing to describe receiver 150, digital signal processor DSP 170, controls all operations of the receiver including mixing frequency, PGA gain, and a selected signal processing algorithm. In the case of a quadrature sampling scheme, the DSP samples the received signals at four times their IF (translated) frequency and then ~~multiples~~ multiplies the received signals ~~it~~ by a separate Sine and Cosine sequence to obtain in-phase and quadrature-phase components. This process converts the received signal from its IF frequency down to a base-band frequency that contains modulated data, if present, while, at the same time, breaks down the signal into its in-phase (I) and quadrature-phase (Q) components. The I and Q components are each passed through a simple low-pass filter (not shown) to remove everything but the modulated data. The filtered outputs are then used to obtain the original data as well as further processing to recover signal magnitude and sign information. Additionally, the outputs are also used, along with a modified phase-lock-loop technique known as Costas loop, for controlling the DDS frequency (which controls the mixer frequency and ADC sample rate) and the PGA gain settings. The exact algorithm varies depending on the modulation scheme used but may be developed by one having ordinary skill in the art in view of this overall disclosure.

Please replace paragraph number 95, in order to delete extraneous text, with the following:

¶95   One suitable roll sequence includes (i) stopping rotation of the boring tool for a time duration of approximately 7 to 20 seconds, (ii) rolling the boring tool at a slow roll rate for a time duration of approximately 7 to 20 seconds and (ii) without stopping, immediately going into a fast roll rate for approximately 7 to 20 seconds. The difference between the fast and slow roll rates may be defined by the drill rig that is in use. Generally, however, a slow roll rate is on the order of approximately 10 to 30 rpm while a fast roll rate is greater than 30 rpm. ~~on the order of approximately 50 to 80 rpm~~ Any defined fast and slow ranges of roll rate may be used so long as the ranges are separated sufficiently to provide for distinguishing therebetween.

Please replace paragraph number 103 with the following:
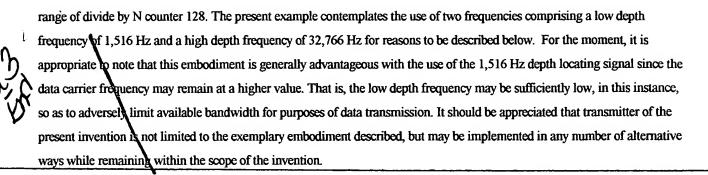
¶103   In another embodiment, additional components are provided as part of receiver 100 including a second divide by N counter 128a which is also controlled by microprocessor 122 (with control shown as passing through divide by N counter 128a for purposes of simplicity). The output of second divide by N counter 128a serves as a depth locating signal, separate from the data carrier frequency which can be modulated by a second modulator 132a. The depth locating signal is provided to driver section 140 for mixing therein with the data carrier frequency. The combined signals are then transmitted simultaneously from antenna 146. Like the data carrier frequency, the depth locating signal is transmitted at any desired frequency, selectively separate from the frequency of the data carrier frequency, and is switchable on-the-fly between any frequencies within the

range of divide by N counter 128. The present example contemplates the use of two frequencies comprising a low depth frequency of 1,516 Hz and a high depth frequency of 32,766 Hz for reasons to be described below. For the moment, it is appropriate to note that this embodiment is generally advantageous with the use of the 1,516 Hz depth locating signal since the data carrier frequency may remain at a higher value. That is, the low depth frequency may be sufficiently low, in this instance, so as to adversely limit available bandwidth for purposes of data transmission. It should be appreciated that transmitter of the present invention is not limited to the exemplary embodiment described, but may be implemented in any number of alternative ways while remaining within the scope of the invention.